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ABSTRACT

This document describes the process by which aspects of nonverbal communication that appear to be indicators of involvement were identified, described, classified, and rated. To facilitate this process, an Action Category System was developed through observation in the natural classroom setting and subsequent analyses of the recorded behavior data. Efforts to devise a behavior category system resulted in these final action categories: motion, stance, pause, visual, nonvisual facial, and self-sounds. Dimensions, indications of how a nonverbal activity is performed, were also defined to aid data collection. Dimensions indicate the speed, frequency, duration, directionality, tension, and range of a nonverbal action. To rate these dimensions, a point of reference must necessarily be identified (five bases, or points of reference, for rating dimensions are given and examples of their use). Some recommended instructions for rating each dimension and an alternative proposal for grouping and defining bases are presented. Further explanations of these data collection processes can be found in two of the appendixes which contain a working paper on dimension definitions and coding procedures and a set of data collection exercises. (SDH)

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Center for Young Children
Occasional Paper Number Twelve

IDENTIFYING, DEFINING, CODING, AND RATING NONVERBAL BEHAVIORS THAT APPEAR TO BE RELATED TO INVOLVEMENT:

Project on Involvement Interim Report No. 2

Jessie A. Roderick
Principal Investigator

Center for Young Children
College of Education
University of Maryland
July 1973

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FOREWORD

Being very much aware that educational literature, and indeed literature from many related fields, frequently refers to the concept of involvement, certain of the staff of the Center for Young Children began to question the meaning of this commonly used term. Thus emerged the Project on Involvement which has been in operation for the past two years. Under the leadership of Professor Jessie Roderick, Associate Director of the Center for Young Children, a number of persons have been investigating into the nature of nonverbal behaviors which give evidence of involvement.

As one reads this interim report, one can get a "feel" for the very demanding and precise observing, thinking, and recording that of necessity went into a research project of this nature. The research topic is a critical one. The difficulty resides not only in trying to deal with the many ramifications of the meaning of involvement but also in trying to make the leap from describing overt nonverbal behaviors to judgments about how involved the person is. This explains why in-depth studies about involvement are not available.

Credit is due Jessie Roderick for her persistence and courage in delving deeply into the many factors which comprise this pehnomenon we call involvement. The Center staff is grateful, too, to those many students, teachers, and graduate assistants who so ably assisted in this project. The cooperative and thoughtful spirit which prevailed among the researchers made our common search into the topic with which we were dealing an exciting experience.

It should be noted that we are presenting an interim report for those who assist in the next phases of this project. The reader is invited to join in our efforts.

Louise M. Berman
Professor and Director
Center for Young Children

PREFACE

The question of how and in which direction one invests his life energies faces each individual as he experiences and shapes his life. If the ability to answer this question in a meaningful and productive manner is important, and we feel it is, then it seems logical that those who are responsible for the learning experiences of others know how to provide an atmosphere or context in which this ability can develop. The Project on Involvement is an effort to generate knowledge about the behavior of individuals who appear to be involved in an interaction. The nonverbal aspect of behavior is the focus of this study.

Attempts to objectively describe the behavior of persons who appear to be involved or actively engaged in interacting with people, materials, or ideas is at best an intricate task. Although the nature of this task and our approach to it as described in this report are still in beginning stages and still in flux, many of the complexities as well as the possibilities and promises of this undertaking have been uncovered through the dedicated work of the project participants and the Center staff.

The guidance, direction, assistance, and constant encouragement of Louise Berman, Director of the Center for Young Children is deeply appreciated. Her skill in helping each participant raise relevant questions and examine them in terms of his own experience and in terms of pertinent literature provided direction and a quality of depth to the project.

Special thanks are due Jean Anderson and Barbara Littlefield, graduate assistants in the Center for Young Children, for their contributions to the

study. They prepared materials for implementing the project, assisted in conducting the analysis and discussion sessions, wrote minutes of the sessions and charted the progress of the study throughout the year, and collected data. In addition, Jean and Barbara participated in planning and evaluating sessions and in designing and utilizing exercises to test content and procedures established to date.

Sincere appreciation is also extended to the students below who gave so generously of their time, skills, and effort. Their work and interest which far exceeded the expectations of the staff contributed substantially to the scope and direction of the research.

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The Project on Involvement would not have been possible without the interest, help, and cooperation of Susan Akman, Sandy Angel, Joan Kissinger, Marion Leiserson, and Lynne Sherald, teachers in the Center. They gave precious time to individual conferences and group meetings on the implications of the research for young children and the classroom in general. We are deeply grateful to them and the children.

Jessie A. Roderick
Principal Investigator and
Associate Director
Center for Young Children

INTRODUCTION

Purposes of this Document

A central purpose of this document is to communicate to the reader the process by which aspects of nonverbal communication that appear to be indicators of involvement were identified, described, classified, and rated. The nature of the context in which these explorations took place is also discussed.

This document also provides the reader with a description of pertinent observational systems that have been developed and which are still in the process of being developed in the Center for Young Children.

It is hoped that in addition to informing the reader of the status of research on nonverbal behaviors which appear to be related to involvement, this report will encourage and facilitate the work of those persons who wish to further refine and develop the observational systems and subsequently collect data utilizing them.

History of the Project on Involvement

The staff of the Center for Young Children is committed to producing knowledge which will make it possible for individuals to function more effectively in classrooms, communities, and world settings. It is assumed that a person who functions well in a variety of settings is able to make wise and appropriate decisions, to communicate with others, to become involved, to appreciate one's worth, and to relate constructively to others.

Since research is one approach to generating knowledge, and since specific knowledge of how people acquire skill in and utilize the processes mentioned above is lacking, the major research thrust in the Center has consisted of efforts to explicate these processes as individuals engage in them in the classroom setting. What indications do learners give to suggest they are deeply engrossed in a task or interaction? How do people differ in their decision making when they are alone and when they are in the company of others? How do people show that they care about others? These are samples of questions which prompt continued research efforts directed toward identifying and describing overt manifestations of internal processes.

The nature of the questions which have emerged and which are projected prompted the need to develop an appropriate research methodology. The search for a procedure which would facilitate the exploration of such questions has constituted a major part of the research efforts of the Center for Young Children. A match between the questions or problems posed and research procedures employed in attempting to answer these questions has been given high priority. To date, most of the procedures utilized are those appropriate to research in the natural setting. (The nature of these procedures is clarified in the section of this document which describes the development and status of observational systems for classifying and rating nonverbal behaviors.)

Since individuals tend to communicate much of what they think and feel through words and actions, efforts to ascertain or obtain overt clues to mental operations have focused on an analysis of the communication process. Also, since most of the Center research is carried on in the natural classroom setting, the nonverbal aspects of communication have been singled out for study. It is assumed that nonverbal behaviors are usually more natural and spontaneous than verbal and that nonverbal behaviors, when exhibited in a setting in which the manipulation of variables is kept at a minimum, tend to indicate an individual's unmasked feelings and thoughts. In addition, it is assumed that all nonverbal behaviors have the potential to be communicative in nature.

The research focus on nonverbal aspects of communication has resulted in the development of guidelines or observational systems for objectively describing classroom interactions. Among them is the Pupil Nonverbal Category System which was later expanded to include teacher and learner behaviors at all levels of schooling.[1]

Use of the Nonverbal Category System revealed the need to examine more closely those nonverbal behaviors which seemed to express feeling or affect and which tended to indicate how a behavior was performed. Further analysis of indicators of how a behavior was expressed led to the possibility that these aspects of nonverbal communication might provide clues to how engaged a person is in a task or interaction. Such indicators include speed and direction. In addition, if procedures for identifying, coding, and rating nonverbal behaviors which appear to be indicators of involvement could be

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[1] For a description of procedures followed in testing the categories on an expanded sample, see A Category System to Describe the Nonverbal Behavior of Teachers and Students: An Interim Report Occasional Paper Two, Center for Young Children, University of Maryland, June 1972.

developed, classroom teachers and researchers could utilize them in collecting data relevant to the process of becoming involved.

To facilitate defining, coding, and rating aspects of nonverbal communication which appear to be indicators of involvement, an Action Category System was developed. In addition, dimensions which indicate how and to what degree an action appears to be expressed were identified and defined.[2] The development of the Action Category System and the procedures for coding and rating the dimensions or indicators of how a nonverbal behavior is expressed are described in the remainder of this document.

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[2] The Project on Involvement: An Interim Report, Occasional Paper Number Four, Center for Young Children, June 1972.

THE DEVELOPMENT AND CURRENT STATUS OF OBSERVATIONAL SYSTEMS FOR CODING AND RATING NONVERBAL BEHAVIORS THAT APPEAR TO BE INDICATORS OF INVOLVEMENT

This report on the Project on Involvement consists of 1) an overview of the nature of research procedures employed in this investigation and a description of the context in which the researchers functioned, 2) an account of the development and current status of the Action Category System, and 3) a summary of the progress to date on definitions and procedures for rating dimensions or indicators of how a nonverbal behavior is performed.

Overview of Research Procedures and the Context in which Investigators Functioned

In order to make the process of involvement more explicit, procedures for describing, coding, and rating nonverbal behaviors that appear to be related to involvement were identified and developed. These procedures consisted of observing interactions in the classroom setting, recording these interactions in diary-fashion records, content analyzing the records according to the project thrust, deriving categories from the analysis, developing observational systems or guidelines, and testing and retesting the categories in the classroom setting. Manipulation of variables in the setting was held at a minimum as were attempts to externally shape or control data as they were collected. At times this procedure imposed limitations such as having to select a subject for observation simply because he was visible at that time. But the value of obtaining data on as natural an interaction as possible appeared to outweigh the limitations.

Underlying the designing and implementing of the research procedure was the assumption that research activities can contribute to and result in the generation of hypotheses and development of theory. Research procedures based

upon this assumption and upon a belief in the value of gathering data in the stream of classroom interactions are not closed and convergent but open and divergent in nature. Within this attitudinal and procedural context the researcher is able to identify the multitude of factors inherent in the problem being explored.

A crucial aspect of the research context or milieu in which the investigations are conducted is the composition of the research groups and how they function. Some knowledge of this is necessary in order to understand and gain a perspective on the procedures employed and the directions the research has taken. To date, participants in the involvement project have been graduate students representing a variety of professional fields and experiental backgrounds. (It should be noted that one undergraduate participated on a volunteer basis.) Included are master's, doctoral, and post-doctoral students from fields both within and outside education. Among the fields represented are art, administration, special education, early childhood and secondary education, and statistics and measurement.

Another factor which influenced the direction and flow of the research was the nature of cooperative research as it functioned in the involvement project. Participants worked in large or small groups depending on the nature of the task. Although the project had been in process for over a year before the 1972-73 group began work on it, there were many opportunities for sharpening procedures and definitions, for refining, for developing appropriate methods, for testing, and for seeing relationships. In the process of engaging in these skills each participant was encouraged to contribute insight gained from reading, data collection, and prior knowledge. A researcher was not viewed as a neutral catalyst but as a contributing agent whose ideas were valued and deemed worthy of consideration. As the involvement project progresses and grows in

depth and breadth, the questions of how to orient new groups to the project and of how much change and revision of prior work are appropriate become increasingly complex. However, the acquisition and development of learnings and skills that participants attribute to being involved in cooperative research attest to its value and the need to continue it in some manner.

Data Collection and Analysis Procedures

Within the context of research in the naturalistic setting and the cooperative procedures described above, certain steps were followed in collecting data pursuant to developing the observation systems. The steps were:

1) observing individuals in the classroom setting and focusing on their nonverbal behaviors

2) recording in diary-fashion the behaviors observed

3) analyzing the content of the recordings for nonverbal behaviors and deriving categories or groupings of nonverbal behaviors

4) developing an observational system or guideline consisting of category descriptions or definitions and illustrative behaviors or in some instances illustrative points on a scale or continuum

5) developing data collection or tally sheets

6) collecting data utilizing the observational guideline and recording on the tally sheets

7) analyzing the data collected (the analyses were by inspection, group discussion, and statistical methods)

8) revising procedures and materials where appropriate

9) testing revisions by observing interactions in the live classroom setting and on videotape

In the beginning stages of developing each observational system, data are usually collected on a large set of behaviors in order to obtain a

perspective on the range of behaviors exhibited. The focus of observation is then narrowed and more specificity achieved. The result of this process has been the development of guidelines which range from those dealing with larger or more broad aspects of behavior to those dealing with more narrow ones. Examples are the Nonverbal Category System, the Action Category System, and the nonverbal dimensions or indicators of how a nonverbal behavior is performed.

Orientation of Project Participants

Individuals who participated in the involvement research project were oriented to the nature of the project and the methodology employed in the following manner:

1) Printed materials including progress reports of the project, related readings, and bibliographies were made available.

2) Visits to the Center for Young Children classrooms and observation booths and discussions with Center staff were conducted.

3) Training sessions in observing, recording, and content analyzing observational records were offered.

4) Coding sessions utilizing videotapes were held.

These orientation procedures were designed to help participants acquire an understanding of what had transpired before their entry into the project and of the possibilities for building on or adding to this knowledge or progress as they became involved themselves. Suggestions of research groups were incorporated in each succeeding orientation.

The Development and Current Status of the Action Category System

The following titles of documents emanating from the research outline the nature and sequence of the development of observational guidelines for describing nonverbal behaviors that appear to be indicators of involvement.

1. Initial Nonverbal Involvement Behavior Category System (Consists of action and modifier definitions and directions for applying them to written observational records)[3]

2. Revised Nonverbal Involvement Behavior Category System (Consists of action and modifier definitions)[4]

3. Nonverbal Action Categories--November 1972 (Consists of definitions, illustrative examples, and recording symbols for actions only)

4. Nonverbal Action Categories--Revised February 1973 (Consists of definitions, illustrative examples, and recording symbols)

5. General Directions for Coding Action Categories

Initial and Revised Involvement Behavior Category Systems

Initial investigations of nonverbal behaviors as possible indicators of the degree of involvement a person brings to an interaction resulted in identifying and defining a set of nonverbal actions and their modifiers. The definitions for the actions and their modifiers and directions for applying them to written observational records comprised the Initial Nonverbal Involvement Behavior Category System. Further application of this system to additional observational records indicated a need for revisions. The original system so revised became the Revised Nonverbal Involvement Behavior Category System.[5] In the latter system, an action was defined as an observable nonverbal behavior of a person as he relates to his enviornment. Categories of actions

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[3]This system and directions for applying it are presented in The Project on Involvement: An Interim Report, Occasional Paper Four, Center for Young Children, University of Maryland, June 1972.

[4]This form of the system and the succeeding forms are included in the body and appendices of this paper.

[5]For a description of the development of these two systems see The Project on Involvement: An Interim Report, Occasional Paper Number Four, Center for Young Children, University of Maryland, June 1972.

identified and defined were Motion, Stance, Visual, Nonvisual Facial, Nonvisual Sensory, Self-sounds and Physiological Self-sounds. A modifier was defined as a word or phrase that indicates how quickly, how often, how long, or with how much tension an action is performed. Modifiers identified were Speed, Tension, Frequency, and Duration. Definitions of these action categories and their modifiers are found in Appendix A.

The action categories and accompanying modifiers contained in both the initial and the revised systems were derived from a content analysis of diary-fashion observational records. A linguistic analysis was performed extracting verbs (action categories) and adverbs or other linguistic units which modified the verbs. Reliability checks were made by applying definitions appearing in the Initial Nonverbal Involvement Behavior Category System and in the Revised Nonverbal Involvement Behavior Category System to written observational records. Results of the reliability checks had implications for definitions of terms, for procedures of recording behaviors in diary-fashion, and for training individuals in this process.[6] Recommendations pertinent to action category definitions are attached to the Revised Nonverbal Involvement Behavior Category System in Appendix A.

Nonverbal Action Categories--November 1972

The major purpose of the Fall 1972 research project on involvement was to explore the feasibility of employing the Revised Nonverbal Involvement Behavior Category System (Appendix A) in direct observation of classroom behavior. To accomplish this purpose it was necessary to sharpen and refine

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[6]For a description of procedures employed in the reliability checks and the findings and suggested revisions see Addendum to the Project on Involvement: Reliability Check on the Revised Nonverbal Involvement Behavior Category System, An Interim Report by Barbara Littlefield, Center for Young Children, University of Maryland, July 1973.

the existing action and modifier category definitions and to develop appropriate procedures for coding live observations using the instrument.

Graduate students who participated in this phase of the project were oriented to the categories and to general procedures for recording behaviors. Instead of recording observations in diary-fashion, symbols or letters which stand for category designations were used. Orientation and training consisted of group observations of videotapes developed in the Center for Young Children for that purpose and live observations in the booths. Researchers observed alone and in pairs. Duration of the observation periods ranged from ten to fifteen minutes. When two researchers attempted to achieve inter-coder agreement while observing the same subject, they used cassette recorders equipped with tapes on which 10-second intervals were announced either by a buzzer or a spoken numeral. Formal computations of inter-coder reliability were not made at that time, but points of agreement and disagreement were discussed and suggestions for future observations made.

Data were collected on subjects who were clearly visible to the observer and who appeared to be engaged in an interaction with materials or with people. Although at this point there was no attempt to make comparisons on the basis of sex, age, or nature of the interaction, the sample did include boys and girls from the three-, four-, and five-year-old classes. Approximately 140 observations were made in the classroom observation booths and on videotape during the research period. Observations were discussed and analyzed in small groups and implications for definitions and coding procedures outlined.

In the process of gathering data it became apparent that developing procedures for coding both actions and dimensions (formerly modifiers) was too large and complicated an undertaking for the available time. In addition, there appeared to be a need to bring some degree of closure to procedures for

one aspect of the project. Since the action categories described nonverbal behaviors which were then examined more closely for evidences of speed, tension, frequency, and duration, major effort was placed on defining action categories and developing procedures for coding them. Although not given priority, information relative to dimensions was also obtained, analyzed, and discussed. In certain instances this information was utilized in clarifying the action categories.

The action category definitions and recording symbols employed in the initial observations follow.

MOTION--MOTION is defined as a movement of the body as a whole and/or parts of the body not included in the categories of Stance, Nonvisual Facial, Visual, Nonvisual Sensory, or Self-sounds. This movement implies movement of the body and/or bodily parts from one place to another. Examples: go, crawl, grab, throw, lift an arm, raise a leg.

Recording Symbol: M

STANCE--STANCE is defined as body position or assuming a body position without actually moving from one place to another. Stance does not involve overt movement of an object or involvement of another person. Examples: sit, kneel, pause, hold an object.

Recording Symbol: S

VISUAL--VISUAL is defined as attention of the eyes as demonstrated by eye movement or eye stance. Examples: stare, look up, look around, watch, scan, eyes wide open.

Recording Symbol: V

NONVISUAL FACIAL--NONVISUAL FACIAL is defined as actions involving the total face or parts thereof not defined as Visual or Sensory. Examples: squints, smiles, blank look, frown.

Recording Symbol: NVF

NONVISUAL SENSORY--NONVISUAL SENSORY is defined as actions involving the senses of taste, smell, touch, and hearing. Examples: taste, touch, listen.

Recording Symbol: NVS

SELF-SOUNDS--SELF-SOUNDS consists of sounds made in conjunction with object movement (sound effects) or made as a vocalized emotional expression.

Recording Symbol: SS

PHYSIOLOGICAL SELF-SOUNDS--Sounds resulting from biological processes.
Examples: sneezing, coughing, burping, and panting.

Recording Symbol: PSS

Data were collected using the following working tally sheet for recording action categories.

CENTER FOR YOUNG CHILDREN
UNIVERSITY OF MARYLAND

September 1972

Tally Sheet for Recording Nonverbal Indicators of Involvement

Action Category
Recording Symbols

M--Motion
S--Stance
V--Visual
NVF--Nonvisual Facial
NVS--Nonvisual Sensory
SS--Self-sounds
PSS--Physiological Self-sounds
(CJ--Cannot Judge)

Child _____

Observer _____

Date _____

Time _____

Context - Person(s) Activity	Category	Stance	Comments

Observers faced with deciding what constituted an activity and which actions were task-related recognized the need for defining activity, task, or context. A stipulated definition of activity would facilitate identifying the activity, determining the direction or focus of attention, the duration of a task, and possibly characteristics or functions of other dimensions.

The definition of activity appropriate to the concept of involvement that was developed for use in the involvement project satisfies each of the following criteria:

1. Evidence exists of interaction between a child and another person(s) and/or material(s).

2. Evidence exists to indicate that the child is giving priority to selected material(s)/person(s) from within the context.

3. Evidence exists of employment of parts of the body and/or senses.

In arriving at this stipulated working definition of activity, the following steps were taken:

1. Minutes of research group sessions were carefully analyzed.

2. Participants were asked to search the literature for definitions of terms such as task and activity. A series of definitions from the literature was compiled.

3. Definitions and discussions of the definitions were exchanged verbally and in writing.

4. Participants were asked to observe children engaged in an activity, note the nature of the activity, identify dimensions noted, and define activity as the observer used it in this observation. In addition, researchers were asked to observe a child that appeared to be engaged in task-related behaviors and one who appeared not to be so engaged. Differences in behaviors observed were summarized. Researchers were also asked to interview the two children observed and ask questions relative to the children's perception of task or activity.

5. Research groups wrote definitions of activity based on research and on discussions.

6. A content analysis of all definitions presented resulted in identifying seven concepts related to activity and appropriate to the concept of involvement. Each concept was checked whether or not it was observable (overt) or nonobservable (covert) in the learning setting. Activity is defined in terms of those concepts or aspects of concepts which are checked only in the observable (overt) column. This includes evidence that a child is giving priority to selected material(s) and/or person(s) from within the context, and evidence of employment of parts of the body and/or the senses as stated above.

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It should be noted that overt or observable concepts are incomplete indicators of the total concept of involvement. They are congruent, however, with the nature of the involvement project, its progress to date, and the expectations inherent in the concept of activity. More complete information including covert indicators can be gained by employing techniques in addition to observation.

The Nonverbal Action Categories--November 1972 (see Appendix B) was the product of observation, analysis, discussion, and revision by the project participants. During the last research group meeting this form of the system was used to code a videotape. Teams of observers were assigned specific categories for coding, analysis, and discussion. Revisions in definitions and coding procedures were incorporated in the Nonverbal Action Categories--Revised February 1973 and the General Directions for Coding Nonverbal Action Categories which follow.

Nonverbal Action Categories--Revised February 1973

MOTION

Definition

Motion--movement of the body as a whole and or parts of the body not included in the categories of Stance, Visual, Nonvisual Facial, or Self-sounds. Body movement includes movement (self) of the body or body parts from one point (place) to another and object movement and or holding or handling an object.

Examples: crawl, throw, lift a leg, raise an arm.

Recording Symbols: M_T, M_A, M

M_T Task-related motion. Recorded each time motion changes within larger context. (i.e. pouring M_T and then stirring M_T is an example of change in motion within the larger context of cooking activity). Small, fine, quickly-changing motions such as fingering beads where beads are turned in one way then another are recorded as one M_T. Actions such as touches object, lifts object to ear, places object in mouth are also recorded as motion.

Readings of these tallies (M_T's) give the number of task-related motions not the number of different ones. Bases for noting a new M_T include a change in materials being manipulated and/or obvious change in kind of body movement.

M_A Motion that appears to be unrelated to the task or interaction. Recorded when motion does not appear to be related to task. Always preceded by an M_T.

M Motion which cannot be identified as related to the previous or emerging task. Recorded also for "comfort motions" such as shifting leg. Comfort motions do not appear to be directly related to the task. (If possible, briefly describe the M in the context column of the tally sheet.)

STANCE

Definition

Stance--body position such as sitting, standing, kneeling, squatting, lying down, leaning. Implied in this is posture which includes the whole body or most of it in a position that lasts for more than a fleeting moment.

Examples: kneeling, leaning, lying down, standing up

Recording Stance: It is assumed that at the beginning of every observation the body assumes or has assumed a posture (position stance.) Only a change in posture will be noted. This change will be noted in the following manner: A ✓ will be placed in the Stance column opposite and to the right of the Motion (M) which resulted in the change in position or posture.

Content	Category	Stance
	M	✓

An alternative to the above would be recording a motion that resulted in a change in stance as M_S.

PAUSE

Definition

Pause--a temporary cessation of an activity in which a person is engaged and/or a condition in which voluntary gross movements of the body stop. (There is an expectation that the activity will continue after the pause or that voluntary gross movements of the body will resume.) Smaller behaviors may occur during pause.

Examples: child stops running for a few seconds then continues

Recording Symbol: P is recorded in sequence in the Category column.

M_T
P
M_T

If smaller behaviors such as smile occur during the pause, they are coded according to directions for recording simultaneous actions.

P_V

VISUAL

Definition

Visual--attention of the eyes as demonstrated by eye movement or eye position. Also includes head movement associated with eye position. (Head movement often facilitates or makes eye movement possible.)

Examples: look up, look at, look around

Recording Symbols: V_T, V_A, V

V_T Eyes are focused on task or an individual is looking toward task or interaction.

V_A Eyes directed away from activity or interaction when it is apparent to the observer that criteria for activity have been met.

V Eye attention that cannot be judged as either V_T or V_A. For example, a child looking around while dancing.

Also includes widening or rolling of eyes while either focused on or directed away from task or interactions.

NONVISUAL FACIAL

Definition

Nonvisual Facial--actions involving the total face or parts thereof not defined as Visual.

Examples: movements of lips, nose, tongue, forehead.

Recording Symbol: F is recorded in sequence in the Category column.

SELF-SOUNDS

Definition

Self-sounds--sounds made in conjunction with object movement (sound effects) or made as a vocalized emotional expression.

Examples: hums, makes a siren noise, laughs, cries

Recording Symbol: SS is recorded in sequence in the Category Column.

General Directions for Coding Nonverbal Action Categories

An action is defined as an observable nonverbal behavior of a person as he relates to his environment.

1. Identify a subject that can be observed closely.

2. Take a few minutes to assess the situation noting what the child is engaged in, with whom he is interacting, and whether or not others are with him. Make a brief notation of this information in the first column of the tally sheet labeled Context--Person(s), Activity.

Note: In order to utilize the action categories, the context selected must satisfy all three of the following criteria:

A. Evidence exists of interaction between a child and another person(s) and/or material(s).

B. Evidence exists to indicate that the child is giving priority to selected material(s)/person(s) from within the context.

C. Evidence exists of employment of parts of the body and/or senses.

3. In the second column (Category) and opposite the activity description write the letter symbol for the first action.

A. When a second action follows a preceding one, the second action is coded directly underneath the first.
i.e. V
NVS

B. When actions occur simultaneously as when a person engaged in a task-related motion (M_T) also exhibits a visual action (V), actions are recorded underneath each other but indented or placed to the right. i.e. M_T
V

Simultaneous motions (i.e. an M_T occurring while another M_T is engaged in) will be accounted for as suggested above.

Sequences of behaviors that are repeated should be coded repeatedly as they occur. i.e.

$M_T V_A$

$M_T V_A$

$M_T V_A$

C. Interim behaviors or those actions which occur after the completion of a task (activity) and before beginning another or engaging in a new context will be recorded without subscripts. These actions appear to be transitional in nature. Comments to this effect may be made in the Context column of the tally sheet opposite the letter symbol.

D. Change in context (activity) can be indicated by noting in the Context column a description of an M_T that is recorded after an M_A and/or several M's if the M_T relates to a new context or larger activity or interaction. If the child returns to the previous task or activity it is not necessary to comment on this activity in the context column.

i.e.

Context	Category
Painting	M_T
	V_T
	M_A
	M
	M_A
*Block Building	M_T

*Note: If the last M_T above had been a motion related to painting there would have been no need to comment or name the new activity in the Context column. (If there is no comment in the context column, it is assumed the child has returned to motions related to the previous context or activity).

4. In the third column (Stance) place a ✓ opposite and to the right of the motion (M) which resulted in the change in position or posture.

5. Review codings at the end of the observation in order to make judgments not made and recorded during the observations.

(See page 13 of this report for sample tally sheet for recording action categories.)

Appendix C contains a summary of the changes and rationales for changes in action category definitions, recording symbols, and coding procedures. A major change in the February 1973 revision of the Nonverbal Action Categories was the deletion of the Nonvisual Sensory category.

Progress Report on Definitions of and Procedures for Rating Dimensions or Indicators of How a Nonverbal Behavior is Performed

Introducation

Research efforts in the Spring 1973 semester were directed toward continuing the development and refinement of that part of the Nonverbal Involvement Behavior Category System dealing with the dimensions or indicators of how an action is expressed. (Defining action categories and developing procedures for coding them constituted the major research thrust of the previous semester.)

It should be noted that in attempting to ascertain the degree of and nature of involvement a person brings to an interaction, social, intellectual, emotional, and physical indicators can be examined. However, this study is limited to examining the physical or nonverbal behaviors which might indicate involvement. These overt observable nonverbal behaviors indicate how the body moves and expresses itself and consequently may provide some clues as to the amount and degree of involvement an individual brings to a task.

Purposes and Procedures

The major purposes of this part of the involvement project were to apply current dimension definitions to observations of individuals in the classroom and on videotape, to refine or revise the definitions as appropriate, and to develop procedures for rating dimensions on a scale. Achieving the latter purpose would enable an observer to rate a dimension such as speed as fast, moderate, or slow according to a stipulated basis for comparison. Achieving

inter-rater agreement on rating dimensions was a sub-purpose of this investigation.

The graduate students and one undergraduate who participated in this segment of the involvement project attended orientation sessions on research procedures in the naturalistic setting and on the development and status of the action categories and dimensions. Observations from the classroom observation booths and observations of video training tapes constituted a large portion of the orientation sessions. Discussion and analysis sessions followed observations.

Dimensions: Assumptions and Early Definitions

In this investigation a dimension was defined as an indication of how a nonverbal action is performed. (Dimensions were labeled modifiers in earlier phases of the project.) Dimensions indicate the speed, frequency, duration, directionality, tension, and range of a nonverbal action. It is assumed that these dimensions can be placed on points along a scale.

Project participants were apprised of the following assumptions underlying the concept of dimension as defined in this study:

1. Body actions (nonverbal behaviors) are enacted or expressed in varying ways and to varying degrees.

2. Differences in ways nonverbal behaviors are expressed are observable.

3. Differences in how and to what degree nonverbal behaviors are enacted can be described by dimensions. Such dimensions or descriptors might include duration, directionality, tension, speed, range and frequency. These dimensions indicate how a body moves and how it expresses itself.

4. Dimensions of nonverbal behaviors can be rated and placed on a two- or three-point scale. (Examples include short, medium, or long duration and narrow, average, broad range.)

The following dimension definitions were used in initial observations with the intent to test them on live observations and revise and refine where necessary.

Duration is an indication of the length of time an action occurs. Duration may be placed on a short, average, long scale which may be further specified in terms of (1) one or two seconds, several seconds, minutes, or (2) briefly, for a while, for a long time.

Frequency is an indication of the amount of repetition or the numbers of times an action occurs. Frequency might be placed on a "two times," "several times," "continuously" scale.

Range of movement is the width of a movement. Range can be placed on a narrow, average, broad scale.

Speed is an indication of the velocity of an action. It may be placed on a slow, moderate, fast scale.

Tension is an indication of the power, intensity, or physical display of emphasis exerted in producing an action. Tension may be placed on a weak, average, or strong scale.

Direction is the focus of attention or movement in terms of a dichotomy of unidirectional behaviors (jumps up, runs toward piano) and multi-directional behaviors (runs around, jumps up and down).

Revised Definition--During Fall 1972 research activities, actions which were on-task or task-related were coded with a subscript T. (M_T). Those not task-related or on-task were coded with a subscript A. (M_A). This procedure is appropriate when direction is defined as the focus of attention or movement toward or away from a task or interaction. It does not appear to account for the aspects of unidirectional and multi-directional behavior. It also does not indicate the degree of on-task or off-task behavior.

Directionality in terms of uni- and multi-directions might suggest focusing and searching behavior. For example, unidirectional behaviors such as looks at or goes to suggest focusing, whereas multi-directional behaviors such as looks around or walks back and forth or among objects or groups of people suggest searching.

Bases or Points of Reference for Rating Dimensions: Initial Guidelines

In addition to testing the dimension definitions, researchers worked on establishing bases or points of reference for rating dimensions observed.[7] The following background on establishing points of reference and rating the dimensions on them was made available to the researchers.

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[7] A working paper consisting of dimension definitions, coding suggestions, and questions resulting from the previous semester's focus on the action categories is found in Appendix D.

Establishing points of reference for rating dimensions. In order to ascertain how to rate a dimension (i.e., Duration-short, average, or long), it is necessary to identify a point of reference. A point of reference might be the individual, the task (activity) or an object. However, since the focus is always on an individual interacting with some aspect of the environment, it is usually difficult to isolate one factor as the point of reference. Therefore, it seems appropriate to speak of rating dimensions in terms of points of reference where the characteristics of the activity or the individual are predominant instead of trying to declare the point of reference clearly as either the individual or the task elements.

Possible bases for making judgments about points of reference. Bases which might be used in rating dimensions are:

1. Potentialities of materials and/or parameters of space or area.
2. An individual's (child's) behavior as compared to the behavior of individuals (children) in general.
3. An individual's (child's) behavior as compared to his own over a period of time.
4. An individual's (child's) behavior as compared to how people in general tend to act in a similar situation.

Rating dimensions when activity is predominant. The following statements seem appropriate when materials and/or working space are used as a point of reference:

1. In general an action may be placed on a dimension scale by using as points of reference the potential extremes the properties of the materials suggest.
2. Judgments about Range appear to be facilitated by using the potentialities of materials and parameters of space as points of reference.
3. Similar judgments about speed and tension do not appear to be as clear-cut.

Questions related to points of reference. The following questions might be considered as data are collected:

1. Are there points of reference in addition to the activity, object, or individual?
2. Might judgments about dimensions be based on indications of change such as increase or decrease?
3. Would the bases for determining points of reference vary with dimensions?

Data Collection: Recording and Rating Behaviors Observed

Utilizing the dimension definitions and bases for rating the dimensions, project participants recorded observations on the data sheet according to directions for using the sheet. The revised data sheet (Figure 1) was used throughout the data gathering period with some minor revisions. The directions for using the sheet (Figure 2) were also revised as needed.

Investigators, in teams of two, explored in depth one dimension at a time. In some cases a team worked on two dimensions at the same time because the dimensions seemed to be closely related. Ten researchers, including two graduate assistants from the Center for Young Children, observed three, four, and five-year-old boys and girls in the Center classrooms and on videotape. There was no attempt to select subjects on any formal basis. Again, children readily observed and those appearing to exhibit a designated dimension were usually selected. In some cases individual children were observed over a period of time. This was necessary when using the base which compared an individual's behavior over a period of time. In some cases the dimension selected dictated this procedure and in some cases it was by choice of the investigator. The purpose was to test the definition and rating procedure as carefully and completely as possible. Although relevant to future studies in this area, it was not the purpose to make comparisons based on age, sex, or nature of activity. During the data collection period, investigators met twice

Figure 1

Project on Involvement

CENTER FOR YOUNG CHILDREN
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2/73

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DATA SHEET (Revised)

Bases for Rating Dimension (check the one employed in this observation)

1. _____Individual's behavior as it appears to be governed by potentialities of materials, space, or area.
2. _____Individual's behavior compared to behavior of individuals of similar age.
3. _____Individual's behavior compared to his own over a period of time.
4. _____Individual's behavior compared to how people tend to act generally in similar situations.
5. _____Objective point of reference (i.e. number of motions per time period)

A. Comments re Context of Observation	B. Dimension _____ Behavior Exhibiting Dimension	C. Rating (3-point scale) Low	Med	High	D. Comments after observing or during, if possible

Figure 2

CENTER FOR YOUNG CHILDREN
UNIVERSITY OF MARYLAND

Project on Involvement February 1973

Directions for Using DATA SHEET on Rating Dimensions (Revised)

1. Select a dimension. Write dimension selected in appropriate space in column B heading.

2. Select a basis for rating the dimension. Check (✓) appropriate basis on top of data sheet. (Bases are numbered 1 through 5.)

3. Select an individual to observe.

4. Observe for a while without recording in order to get a feel for the situation.

5. Comment on context of observation in column A on the data sheet.

6. Engage the 10-second beep audio tape. (Other tapes such as those giving 10-second observe, 20-second record signals may be used.)

7. When the beep sounds, observe until you hear the next beep. At the sound of the second beep begin recording actions (nonverbal behaviors) in which the selected dimension was evidenced. Rate these actions exemplifying the dimension by checking the appropriate space in the Rating column (C). Ratings should be in terms of the basis selected before the observation began. An alternative procedure for recording behaviors or actions would be to record as you observe during the 10-second interval.)

8. Check with your partner to see where you recorded similar behaviors and where you rated them in the same way. Compute inter-coder agreement if desired.

9. Record comments, reactions, etc. in column D on the right.

a week for a period of six weeks. For the most part one or two teams met with the Center staff engaged in the project. It is estimated that the ten investigators made a total of 240 observations of children in the classrooms and on videotape. The total number of observations is based on an estimated 24 observations each about 30 seconds duration made by each observer. This computation suggests that each observer made four observations prior to each of the analysis and discussion sessions. In some cases observer teams observed more than four times and some less, but generally speaking the former appeared to be practice.

It is significant to note that behaviors were recorded in words which described the action as the observer perceived it and not by using recording symbols representing an action category. An example is given below.

Figure 3

Excerpts from Data Sheet (Revised)--Project on Involvement

Dimension Speed B. Behavior Exhibiting Dimension	C. Rating (3 point scale)		
	Low	Med.	High
ran to open door			

At first, observers tended to include words telling how the running took place. For example, the child ran quickly to the door. However, checking a sub-column in Column C would account for the quickness or "how" of the action when speed was the dimension focus. A more efficient means of recording behaviors (B) would appear to be coding actions using the symbols for action categories as described earlier in this document. Symbols were not employed in this phase of the project for the following reasons: writing out behaviors in words would be easier for investigators new to the project, and this procedure would probably yield still more information during these exploratory

phases. (In evaluating the procedures described, some investigators felt they would have benefited by having been trained in the action categories and by having used the action symbols to code behaviors.)

Results of Data Collection

Dimension definitions. After applying the dimension definitions cited earlier (see p. 21) to live observations and videotapes and after discussing and analyzing procedures and data collected as a result of employing these definitions, the following definitions were drafted:

Duration of an Activity is the length of time an individual interacts with particular materials or people.

Frequency of Movement is the amount of repetition one can observe in terms of the number of times a movement occurs. Movement frequency refers to individual motions occurring within the context of a larger activity (i.e. dipping brush, applying strokes to easel during activity or painting.)

Frequency of Activity is the number of times an individual engages in or returns to an activity or interaction such as painting or cooking. (This is a summary dimension arrived at by examining tallies or codings after an observation is completed.)

Range is the width of a movement.

Speed is an indication of the rapidity of a movement or action.

Physical Display of Effort (formerly Tension) is an overt bodily manifestation of the degree of physical force, emphasis, or power exerted in an interaction. Manifestations of physical force include muscular contractions of body, coloration, tremors.

Direction is the focus of an action such as visual (V) or motion (M) toward or away from a task or interaction. On-task or task-related motions appear to be directed toward the task or interaction. Motions which do not appear to be directed toward the task or interaction are off-task or not task-related.

Directionality refers to the focus of attention or movement in terms of singularity or multiplicity of direction. Unidirectional movements indicate a single focal point or direction such as looks at movie, runs forward, or steps to the table. Multidirectional movements indicate a lack of a single focal point but rather more than one or none. Examples include running back and forth, walking around among objects.

Alternate or supplementary definitions. In addition to the definitions above, alternate or supplementary definitions were proposed for some dimensions.

Physical Display of Effort was also defined in terms of indicators of physical force or power which are not bodily manifestations but which result from the application of physical force or power. These include observable change in shape or size of materials, manipulation of multiple materials at one time, and accompanying auditory cues such as loudness of drums when tapped. Although these appear to be indicators of effort, by definition they are not nonverbal behaviors but rather results of such. For this reason and the fact that the definition focusing on nonverbal behaviors was employed successfully in a related study, the latter definition was not included in definitions resulting from the semester's work. Reference is made to it here to facilitate an exploration of it in the event future study indicates a need to develop a supplementary definition of effort.

Alternative definitions were also proposed for Range, Direction, and Directionality. These definitions follow.

Range is the width of motion applied to non-visual motion only.

Direction is the focus of a movement toward or away from a task. Motion directly related to a task or interaction is on-task or task-related. Motion not directly related to task or interaction is off-task. (Note: Task is defined by the direction of a person's vision.)

Directionality refers to vision focus. Vision focus on an identifiable physical unit is unidirectional. Vision that is not focused on an identifiable physical unit is multidirectional.

The above definitions apply only when activity or task is defined by the direction of a person's vision. (The definition of activity established earlier and employed with the definitions drafted as a result of the semester's work required that each of the following conditions be satisfied: 1. Evidence of interaction between an individual and material or other individual(s); 2. Evidence that a subject is giving priority to selected materials or persons within the context; 3. Evidence of employment of parts of the body or the senses.) The results of a short data collection excercise

(see Appendix E. Exercise 2) in which activity is defined by the direction of a person's vision suggests that at this point the broader definition of activity is more feasible and appropriate to the problem and procedures.

Bases for rating dimensions. The following bases for rating dimensions were developed in the fall semester and applied in the spring to data collected in live observations or by observing videotapes:

Base 1. Individual's behavior as it appears to be governed by potentialities of materials, space, or area.

Base 2. Individual's behavior compared to behavior of individuals of similar age.

Base 3. Individual's behavior compared to his own over a period of time.

Base 4. Individual's behavior compared to how people in general tend to act in a similar situation.

Base 5. Objective point of reference (i.e. number of motions per time period or unit.)

Using a base in rating a dimension enables an observer to make a judgment as to whether a behavior in which a dimension is exhibited is low, medium, or high in terms of the selected base. For instance, if the speed with which an individual pounds a nail is noted and Base 3 (individual's behavior compared to his own over a period of time) is used to judge whether this is fast, moderate, or low speed for this person, the judgment or rating would be determined by comparing the speed of this motion to the speed of similar motions exhibited at other times by this person.

Investigators were asked to observe a subject and record behaviors in which the dimension being explored was exhibited. The researchers were also asked to rate these dimensions using one of the five bases for rating. The basis for rating had been selected prior to the observation. Each research team was asked to make at least one observation for each basis used to rate the dimensions. The purpose of this procedure was to determine whether or

not all bases could be used for all dimensions or whether some bases would be more appropriate for use with some dimensions than with others. A summary of the recommended uses of bases with selected dimensions resulting from the research teams' procedures is presented in Figure 4.

Figure 4

Recommended Combinations of Bases and Dimensions
Ranked in Descending Order of Appropriateness

Base 1	Base 2	Base 3	Base 4	Base 5
1. Range 2. Speed 3. Effort	1. Frequency 2. Duration 3. Range 4. Effort 5. Speed	1. Frequency 2. Duration 3. Range 4. Effort 5. Speed		1. Duration 2. Frequency 3. Speed

No recommendation is given for the use of Base 4 (Individual's behavior compared to how people in general tend to act in a similar situation) since researchers found it difficult to apply this base when observing young children. One team proposed that this base might function when adolescents were being observed.

After an objective point of reference has been established (Base 5) for a particular dimension, the units such as number of motions per time period or combinations of them can be employed in rating the dimension on another basis. For instance, if in using Base 5 (an objective referent) playing with blocks for a period of 10 minutes is designated a long duration for a 4 year old, this time unit may also be used in making judgments in which the behavior of an individual is compared to his own over a period of time (Base 3) or to

the behavior of individuals of similar age (Base 2).

Recommended instructions for rating each dimension. In addition to testing in general which base or bases was appropriate to each dimension, where possible, the research teams developed specific instructions for rating each dimension. Although incomplete and in need of further testing and developing, the following rating instructions were recommended:[8]

Duration. The amount of time in minutes and seconds is noted for each activity or interaction with materials or people. After timing individuals at similar activities it might be possible to place duration on a short (low), average (medium), long (high) scale using time units obtained in the observations.

Frequency. Frequency of movement can be placed on a scale ranging from no repetition or few (low) to movement occurring several times (medium) to movement occurring many times (high).

Frequency of Activity. This is a summary dimension arrived at by examining tallies or codings after an observation is completed. Ratings would be made on a ratio basis by comparing frequency of returning to an activity or activities as evidenced in a series of observations.

Speed. Speed is rated high when it is fast, i.e., a single movement or unit takes less than one second or before you can say, "a thousand one." It is rated medium when it is moderate, i.e., a single movement or unit takes one to two seconds, and it is rated low when a single movement or unit takes more than two seconds. Speed might be placed on a pause, slow to moderate to fast scale.

Range. Range may be placed on a narrow (low), average (medium), broad (high) scale. Specific rating instructions for this dimension were developed using an alternate proposal for bases for rating dimensions. This proposal is presented on page 34.

[8]Complete notes of each research team are available in the Center for Young Children research files.

Physical Display of Effort (Effort). Effort is rated low when observable changes in body manifestations are just discernible or slight. It is rated medium when these changes appear to be moderate and high when there is an unusual or drastic change in body manifestations in which physical limits are approached. (If the supplementary definition of effort as described on page 28 were applied, rating instructions would be similar to those above but change in size or shape of materials acted upon would be rated and the loudness of noise accompanying a movement noted.)

Directionality. This dimension is not rated on a three-point scale but is checked on one of two conditions. It is rated unidirectional (Uni) when there appears to be a single focal point or direction such as steps to the table and multidirectional (Multi) when there is more than one focal point such as running back and forth or among objects.

Direction. This dimension is checked on one of two points. On-task motions or those that are task related or directed toward the task or interaction are noted as on-task. Those not related to the task or interaction are noted as off-task. (When this dimension is used with the action categories, the direction is noted by the appropriate subscript to a motion tally. For example, M_T designates a task-related motion and M_A one that is not related to the task. If action category symbols are not used, a direction column dividied into ON and OFF subcolumns may be added to a tally sheet.)

Alternative proposal for grouping and defining bases for rating dimensions. The research team working on defining and rating Range proposed an approach which introduced some new elements that suggested revisions and a regrouping of the original set of five bases for rating dimensions.[9] In the scheme they

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[9] Hal Laydon and Thomas McGarry were the members of the research team working on Range.

presented, the team proposed the prerequisite definitions for Range, Activity, Directionality, and Direction given below.

Range is the width of motion applied to non-visual motion.

Activity or task is defined by the direction of a person's vision.

Directionality refers to vision focus. Vision focus on an identifiable physical unit is unidirectional. Vision that is not focused on an identifiable physical unit is multidirectional.

Direction is the focus of a movement toward or away from a task.

The proposal consists of two groups of bases. They are bases using static or semi-objective references such as materials, space, and physical limits of a person and bases using fluid references or the behavior of individuals compared only to behavior of the same or other individuals. Within these two groupings there are specific directions for rating elements of the static and fluid references. The word original precedes designations of Base 1, 2, etc. These base designations refer to bases described earlier in this paper. All directions in this proposal were developed for use when rating the Range dimension.

I Bases using Static or Semi-objective References. (Materials, space, physical limits of person.)

(Original) Base 1.

materials--to rate motion of the parts of the body in contact with the materials as they move on or over the physical area of the materials.

low range--motion over a small portion of the materials.
high range--motion over almost the whole area of the materials

space--to rate locomotion

low range--the shortest locomotion path necessary to use the materials
high range--a locomotion path more than a few steps off the shortest path

(Original) Base 4. (New Definition) Individual's behavior compared to his limits as a person

to rate motion of parts of the body not in contact with the materials, or in contact with the materials but moving them as a whole or using them as a tool.

low range--motion of bodily parts just discernible
high range--motion of bodily parts near the physical limits of displacement

(Original Base 5. Could use measured distance of motion or measured distance from some reference point.

II Bases Using Fluid References or Behaviors (Actions) Compared Only to Other Behaviors of one Individual Over a Period of Time or to Behavior of Other Individuals.

(Original) Base 3. The individual's behavior is considered as pure motion, unrelated to materials, space, or personal limits.

low range--width of motion is less or more narrow than the person usually displays.
high range--width of motion is more wider than the person usually displays.

(Original) Base 2. The individual's behavior is considered as pure motion, and is compared to the pure motion of others.
Modified by Base 1 (Originial)--How do other children using the same materials behave?
Modified by Base 3 (Original)--How does the pure motion of the child compare with the pure motion of others?

The team exploring Range found the above procedures workable. This grouping was tried on a limited basis by other research teams using other dimensions and was incorporated in two exercises aimed at pulling together some of the main ideas from the semester's work. (See Appendix E for copies of these exercises.) The restricted definition of activity created some coding problems and the translation of these procedures into procedures appropriate to other dimensions was not completed. However, the possibility of using the more inclusive definition of activity with these bases and of translating the rating and coding procedures into procedures to be employed with other dimensions

needs to be tested out.

Questions related to listing and rating behaviors during live observations. Once dimensions have been defined, bases for rating these dimensions identified, and procedures for rating dimensions on a three- or two-point scale established, an investigator can begin to collect data on how nonverbal behaviors are performed. However, additional questions, concerns, and decisions face the observer. The following questions were raised during observations and during discussion periods after the observations:

1. Which time units are appropriate for observing and for recording?
2. Should all behaviors observed be listed and only those in which the designated dimension is exhibited rated? (This assumes a dimension focus for an observation.) Or, should only those behaviors in which the dimension focus is exhibited be listed?
3. Should the larger activity such as cooking be rated or should the smaller behaviors such as stirring and pouring associated with the cooking be listed and rated?
4. Should an observer focus on a part of the body such as the hands and arms as opposed to the whole body?
5. Which basis for rating dimensions should be selected?

Firm decisions relative to the above questions or options have not been made, but some comment based on project work to date can be made. Observers used a 10-second observe, 20-second record time unit during most of the semester. However, in some instances researchers felt the 20-second record time was unnecessary. A case in point was Exercise 2 (see Appendix E) where the observation was quite limited in terms of observation focus and, as a result, observers felt they could observe and record simultaneously.

The question of listing all behaviors or only those in which a specified dimension is evident depends on the focus of the observation such as an activity, a part of the body, or a dimension. In practice, teams working on Range, Frequency, and Effort listed all behaviors while the team working on Speed listed

only those behaviors pertinent to the dimension. Perhaps this question could be answered more readily if behaviors were not listed in words but were coded using the action category symbols. This remains to be tested.

The majority of the teams recorded smaller actions or movements within the larger activity context. An exception to this was Duration. However, given more time to obtain objective data, an observer might time the smaller motions as well. Again, the purpose of the observation will determine which procedure is selected.

Whether an observer focuses on a part of the body or the whole body depends on the purpose of the observation, how precise he wishes his data to be, and the stage of development of the data-gathering procedures.

Decisions on selecting bases for rating dimensions might be made in terms of the research teams' findings or recommendations. These recommendations were presented earlier in Figure 4 on page 31. As work on the project continues, more specific answers to these questions will be achieved and more questions will be raised.

Inter-observer Agreement on Listing and Rating Behaviors

Establishing some degree of inter-observer agreement was a major concern of each research team as it worked toward developing procedures for testing and rating aspects of nonverbal behaviors that appear to be indicators of involvement. Since the project was still in the exploratory stages, the research proposal did not delineate procedures for computing inter-rater agreement or reliability. However, since each team was deriving its own means of computing agreement, the following standard formula for computing reliability for two coders was given in order to standardize the procedure.

$$\frac{2\ C_{12}}{C_1 + C_2}$$

Two types of reliability can be computed. They are reliability for listing behaviors exhibiting a dimension and reliability for listing and rating behaviors exhibiting the dimension. In the former case C_{12} represents the number of behaviors that the first coder listed, and C_2 represents the number of behaviors that the second coder listed. In the latter case C_{12} represents the number of behaviors that both coders listed and rated the same. C_1 represents the number of behaviors that the first coder listed and rated, and C_2 represents the number of behaviors that the second coder listed and rated. For example, in one of their observations J.O. listed 9 behaviors and R.R. listed 8 behaviors. There were six behaviors that each listed the same and four behaviors that each listed and rated the same. The reliability of listing and rating behaviors is (2) (4)/ (9 + 8) = 8/17.

Reliability for listing and rating behaviors in each of the dimensions varied considerably with some teams achieving reliabilities as high as .70. Reliability was generally higher for listing behaviors than for rating them and varied with the base being employed. The team working on Speed achieved higher inter-rater reliability when focusing on a part of the body than when focusing on the whole body.

No conclusions or recommendations are made at this point relative to inter-rater agreement. It appears that respectable reliabilities could be achieved with more clarification and specification of procedures and purpose.

Collecting Data by Utilizing Definitions, Bases, and Procedures for Listing and Rating

Two exercises for collecting data on live observations were designed in an attempt to bring together some of the definitions and procedures developed during the semester.[10] One exercise required observers to list and rate

[10] Jean Anderson and Barbara Littlefield, graduate assistants in the Center for Young Children assumed major responsibility for designing and implementing these exercises.

behaviors displaying dimensions of Speed, Effort, Range, and Directionality. A second exercise focused on Duration and Frequency. (See Appendix E for these exercises.) Time did not permit a thorough testing of these exercises but trying them did suggest revisions in them and some direction for future work on the involvement project. The following suggestions or revisions were made:

1. The broader definition of activity as stated on page 1 of Exercise 2 needs to stipulate that all three conditions of A, B, and C must be met. (This correction has been made.)

2. If one part of the body is signled out for observation such as is done in Exercise 2, this condition must be congruent with the activity definition employed. For instance, in Exercise 2, activity was defined by the direction of a person's vision, yet the only focus of observation was the hand and arm.

3. Activity defined by the direction of a person's vision does not appear to be feasible. The activity changes too frequently.

4. If behaviors are to be rated on several dimensions each behavior should be listed and rated on all dimensions before listing the next behavior. An alternative might be listing several behaviors then going back and rating them.

5. Perhaps the use of Action Category symbols instead of listing each behavior in words would decrease or eliminate the variation among observers in the number of behaviors written during a specified time unit.

6. The 20-second rate period was not necessary when only Duration and Frequency of hand and arm motions were observed during the 10-second record unit.

7. Specific training in observing, recording, and rating procedures must precede an individual's attempting to do an exercise such as those designed for this project.

A LOOK AHEAD

The preceding suggestions for revising data collection procedures indicate a direction for future work on the Project on Involvement. However, the direction or directions that the project takes will depend on the priorities of the individuals who pick up and build on the work accomplished

to date. There are areas in which closure can be achieved without ruling out the possibilities for further developing the instrument along different lines. There is a need for as well as an opportunity to develop a form of the instrument which could be used by classroom teachers, a form which could be employed by persons who develop curriculum in the school, and a form which might be utilized by researchers who are not formally associated with the school family.

APPENDIX A

REVISED NONVERBAL INVOLVEMENT BEHAVIOR CATEGORY SYSTEM

CENTER FOR YOUNG CHILDREN
UNIVERSITY OF MARYLAND

REVISED NONVERBAL INVOLVEMENT BEHAVIOR CATEGORY SYSTEM
DEFINITIONS SHEET FOR NONVERBAL INVOLVEMENT BEHAVIORS (3/72)

ACTION

An ACTION is defined as an observable nonverbal behavior of a person as he relates to his environment. The ACTION as here defined is generally signalled by a verb phrase (but may be signalled by a noun phrase) without its speed, tension, frequency, or duration modifiers. Examples: shuffles over to original table, smiles broadly.

MOTION--MOTION is defined as a movement of the body as a whole and/or parts of the body not included in the categories of Stance, Nonvisual Facial, Visual, Nonvisual Sensory, or Self Sounds. This movement implies movement of the body and/or bodily parts from one place to another. Examples: go, crawl, grab, throw, lift an arm, raise a leg.

STANCE--STANCE is defined as body position or assuming a body position without actually moving from one place to another. Stance does not involve overt movement of an object or involvement of another person. Examples: sit, kneel, pause, hold an object.

VISUAL--VISUAL is defined as attention of the eyes as demonstrated by eye movement or eye stance. Examples: stare, look up, look around, watch, scan, eyes wide open.

NONVISUAL FACIAL--NONVISUAL FACIAL is defined as actions involving the total face or parts thereof, not defined as Visual or Sensory. Examples: squints, smiles, blank look, frown.

NONVISUAL SENSORY--NONVISUAL SENSORY is defined as actions involving the senses of taste, smell, touch, and hearing. Examples: taste, touch, listen.

SELF-SOUNDS--SELF-SOUNDS consists of sound made in conjunction with object movement (sound effects) or made as a vocalized emotional expression. Examples: hums, makes a siren noise, laughs, cries.

PHYSIOLOGICAL SELF-SOUNDS--Sounds resulting from biological processes. Examples: sneezing, coughing, burping, and panting.

MODIFIER

A MODIFIER is a word or phrase that indicates how quickly, how often, how long, or with how much tension an action is performed. A Modifier usually accompanies an observable nonverbal behavior. For example, in the observable nonverbal behavior "Sharon ran quickly across the room," the action is "ran across the room," and the modifier is "quickly."

SPEED MODIFIER-- A SPEED MOFIFIER is an indication of the velocity of an action. The Speed Modifier is usually signalled by an adverb or an adverbial phrase. Speed Modifiers are placed along a slow, moderate, or fast continuum. Example: slowly, rapidly.

TENSION MODIFIER-- A TENSION MODIFIER is an indication of the power or physical display of emphasis exerted in producing the action. Words that describe observable relaxation or tension apply. A Tension Modifier is usually signalled by an adverb or an adverbial phrase. Tension Modifiers are placed along a weak, average, or strong continuum. Examples: loosely, tightly.

FREQUENCY MODIFIER-- A FREQUENCY MODIFIER is an indication of the amount of repetition or the number of times an action occurs. A Frequency Modifier is usually signalled by an adverb or adverbial phrase. Frequency Modifiers are placed along a "two times," "several times," "continuously" continuum. Examples: again, repeatedly.

DURATION MODIFIER-- A DURATION MODIFIER indicates the length of time an action occurs. Duration Modifiers are signalled by words or phrases (not necessarily clocked times.) Duration Modifiers are placed along a short, average, and long continuum. Examples: one or two seconds, several seconds, minutes, or, briefly, continues to.

Suggested Revisions in Definitions or Names of Action and Action Categories Resulting from Reliability Checks

1. Change the name of the Motion category to Other Motion or Global Motion and place it at the end of the listing of action categories on the definition sheet.

   or

   Change the phrase in the Motion definition "not included in the categories of" to "not included completely within the categories of."

2. Add "turns head" to examples under Motion.

3. Change the phrase in the definition of Nonvisual Facial "not defined as Visual or Sensory" to "not defined completely as Visual or Sensory."

APPENDIX B

NONVERBAL ACTION CATEGORIES--NOVEMBER 1972

CENTER FOR YOUNG CHILDREN
UNIVERSITY OF MARYLAND

PROJECT ON INVOLVEMENT
NONVERBAL ACTION CATEGORIES--NOVEMBER 1972

Motion

Definition

Motion--movement of the body as a whole and/or parts of the body not included in the categories of Stance, Visual, Nonvisual Facial, Nonvisual Sensory, or Self-sounds. Body movement includes movement (self) of the body or body parts from one point (place) to another and object movement and/or holding or handling an object.

Examples: crawl, throw, lift a leg, raise an arm.

Recording Symbols: M_T, M_A, M

M_T Task-related motion. Recorded each time motion changes within larger context (i.e. stirring (M_T) or pouring are examples of change in motion (M_T) within context of cooking.) Reading of these tallies gives the number of task-related motions not the number of different ones. Bases for noting a new M_T include a change in materials being manipulated and/or obvious change in kind of body movement.

M_A Motion that appears to be unrelated to the task or interaction. Recorded when motion does not appear to be related to task. Always preceded by an M_T.

M Motion which cannot be identified as related to the previous or emerging task. Recorded also for "comfort motions" such as shifting leg. Comfort motions do not appear to be directly related to the task. (If possible, briefly describe the M in the context column of the tally sheet.)

Stance

Definition

Stance--body position such as sitting, standing, kneeling, squatting, lying down, leaning. Implied in this posture which includes the whole body or most of it in a position that lasts for more than a fleeting moment.

Examples: kneeling, leaning, lying down, standing up

Recording of Stance:

It is assumed that at the beginning of every observation the body assumes or has assumed a posute (position stance.) Only a change in posture will be noted. This change will be noted in the following manner: A ✓ will be placed in the Stance column opposite and to the right of the Motion (M) which resulted in the change in position or posture.

Context	Category	Stance
	M	

An alternative to the above would be recording a motion that resulted in a change in stance as M_S.

Pause

Definition

Pause--(a) a temporary cessation of an activity in which a person is engaged, (b) a condition in which voluntary gross movements of the body stop. (There is an expectation that the activity will continue after the pause or that voluntary gross movements of the body will resume.) Smaller behaviors may occur during the pause.

Examples: child stops running for a few seconds then continues

Recording Symbol: P is recorded in sequence in the Category column. If smaller behaviors such as smile occur during the pause, they are coded according to directions for recording simultaneous actions, i.e.

P_{NVF}

M_T

Visual

Definition

Visual--attention of the eyes as demonstrated by eye movement or eye position. Also includes head movement associated with eye position. (Head movement often facilitates or makes eye movement possible.)

Examples: look up, scan, watch, look around

Recording Symbols: V_T, V_A, V

V_T Eyes are focused on task or individual is looking toward task or interaction.

V_A Eyes directed away from activity or interaction when it is apparent to the observer that criteria for activity have been met.

V Eye attention that cannot be judged as either V_T or V_A. Widening or rolling of eyes while either focused on or directed away from task or interactions.

Nonvisual Facial

Definition

Nonvisual Facial--actions involving the total face or parts thereof not defined as Visual or Sensory.

Examples: smile, lip, forehead, nose, tongue movements, frown

Recording Symbol: F is recorded in sequency in the Category column

Nonvisual Sensory

Definition

Nonvisual Sensory--actions involving the senses of taste, smell, touch, and hearing

Examples: touches object, lifts object to ear, places object in mouth

Recording Symbol: SE is recorded in sequence in the Category column

Self-Sounds

Definition

Self-sounds--sounds made in conjunction with object movement (sound effects) or made as a vocalized emotional expression

Examples: hums, makes a siren noise, laughs, cries

Recording Symbol: SS is recorded in sequency in the Category column

Physiological Self-Sounds*

Definition

Physiological Self-Sounds--sounds resulting from biological processes

Examples: sneeze

Recording Symbol: PSS is recorded in sequency in the Category column

*It has been suggested that at this point this category be deleted from the present set of categories.

APPENDIX C

CHANGES AND RATIONALE FOR CHANGES IN ACTION CATEGORY DEFINITIONS, RECORDING SYMBOLS, AND CODING PROCEDURES

CHANGES AND RATIONALE FOR CHANGES IN ACTION CATEGORY DEFINITIONS, RECORDING SYMBOLS, AND CODING PROCEDURES

MOTION

Previous Definition	Revised Definition	Rationale for Change
Movement of the body as a whole and/or parts of the body not included in the categories of Stance, Nonvisual Facial, Visual, Non-visual Sensory or Self-sounds. This movement implies movement of the body and/or bodily parts from one place to another. Examples: go, crawl, throw, lift a leg, raise an arm	Movement of the body as a whole and/or parts of the body not included in the categories of Stance, Visual, Non-visual Facial, Self-sounds. Body movement (self) of the body or body parts from one point (place) to another and object movement and/or holding or handling an object. Examples: crawl, throw, lift a leg, raise an arm	Non-visual Sensory was removed from the definition because the category was deleted from the Action Categories. Object movement and/or holding or handling an object were included in the definition because these motions were observed with sufficient frequency during repeated observations.

Previous Recording Symbol and/or Coding Procedure	Revised Coding Procedure	Rationale for Change
M	M_A (Motion unrelated to task) M_T (Motion related to task)	Differentiate between movements related to and those unrelated to task
	M--Motions that cannot be identified as related to the previous or emerging task. Also recorded for "comfort motions" such as shifting leg.	Provides a means of recording motions not identified as M_T or M_A
	Bases for noting a new M_T A new M_T is recorded each time the movement changes or there is a change in materials being manipulated. Example: Playing in house, cooking, stirs M_T; bakes M_T Examples: Working with paste, scissors, and paper reaches for paste M_T cuts paper M_T	Eliminates confusion about recording changes in parts of an activity. It was decided that changes in movement or materials being manipulated would result in a new on-task motion.

STANCE

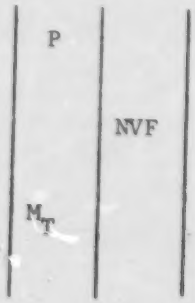
Previous Definition	Revised Definition	Rationale for Change
Body position or assuming a body position without actually moving from one place to another. Stance does not involve overt movement of an object. Examples: sit, kneel, pause, hold an object	Body position such as sitting, kneeling, standing, squatting, lying down, leaning. Implied in this is a posture which includes the whole body or most of it in a position that lasts for more than a fleeting moment. Examples: kneeling, leaning, lying down, standing up	Difficulty in differentiating between assuming a body position without actually moving from one place to another (stance) and moving from one place to another (motion). Revised definition clarifies difference between the act of assuming a body position (motion) and a held body position or posture (stance). Pause was deleted from the example and became a separate action category. Stance is body position and pause is a cessation in body movement.

Previous Recording Symbol and/or Coding Procedure	Revised Coding Procedure	Rationale for Change
S	<table><tr><th>Context</th><th>Category</th><th>Stance</th></tr><tr><td></td><td>M</td><td>✓</td></tr></table> A change in posture is noted by placing a ✓ to the right of the motion (M) which resulted in the changed posture. or M_S (motion that resulted in a change of stance)	Identifies motion that resulted in a change in bodily position or posture. Coding procedure provides an account of the number of times a person changed body posture. M_S might be a simpler recording format and reduce complexity by eliminating the stance category.

PAUSE

Previous Definition	Revised Definition	Rationale for Change
None	Pause is a temporary cessation of an activity in which a person is engaged and/or a condition in which voluntary gross movements of the body stops. (There is an expectation that the activity will continue after the pause or that voluntary gross movements of the body will resume.) Smaller behaviors may occur during the pause. Example: A child stops running for a few seconds and then continues	Provides a category which describes behaviors when an individual momentarily ceases an activity or a gross body movement. Also singles out situations in which there appears to be an expectation that activity will continue after a pause or that gross voluntary movements of the body will resume. Facilitates coding facial and visual behaviors such as eye blink or nose twitch during a pause.

Previous Recording Symbol and/or Coding Procedure	Revised Coding Procedure	Rationale for Change
None	P If smaller behaviors occur during pause, they are recorded as simultaneous actions	



(Child pauses, smiles /<u>while pausing</u>/ and then returns to his activity)

VISUAL

Previous Definition	Revised Definition	Rationale for Change
Attention of the eyes as demonstrated by eye movement or eye stance. Examples: Stare, look up, look around, star eyes wide open	Attention of the eyes as demonstrated by eye movement or eye position. Also includes head movement associated with eye position. (Head movement often facilitates or makes eye movement possible.)	Includes head movement that often accompanies or facilitates eye movement. (Look up and look around imply head movement) Stare and scan were deleted from the examples because they are subjective words that require the observer to interpret how the visual activity was conducted. Eyes wide open was deleted from the example because wide open describes how or to what degree the action was performed.

Previous Recording Symbol and/or Coding Procedure	Revised Coding Procedure	Rationale for Change
V	V_T-- eyes focused on task or an individual is looking toward task or interaction V_A-- eyes directed away from activity or interaction when it is apparent that criteria for activity have been met V-- eye attention that cannot be judged V_T or V_A Examples: looking around while dancing, rolling the eyes, widening of the eyes	Division of V into V_T and V_A enables the observer to differentiate between visual actions which are task related and those unrelated to task. V facilitates recording all eye movements which the observer cannot judge to be related or unrelated to task.

NONVISUAL FACIAL

Previous Definition	Revised Definition	Rationale for Change
Actions involving the total face or parts thereof not defined as Visual or Sensory	Actions involving the total face or parts thereof not defined as Visual	Sensory was deleted from the definition because the category was dropped from the action categories.
Examples: smile, frown, squint, blank look	Examples: movement of lips, tongue, nose, forehead	Smile, frown, and blank look were deleted from the examples because the words are subjective and require interpretation on the part of the observer. Movement of the lips and forehead movement do not require the same subjective interpretation. Blank look and squint were removed from the examples because they were examples of visual behaviors. (The revised definitions require no subjective evaluation by the observer.)

Previous Recording Symbol and/or Coding Procedure	Revised Coding Procedure	Rationale for Change
NVF	F	Fewer symbols to record

NONVISUAL SENSORY

Previous Definition	Revised Definition	Rationale for Change
Actions involving the senses of taste, smell, touch, and hearing. Examples: pat, taste, touch, and listen	Deleted from nonverbal action categories	Nonvisual Sensory involved neurological input that the individual experiences but that the observer can only infer from behaviors manifested by the individual

Previous Recording Symbol and/or Coding Procedure	Revised Coding Procedure	Rationale for Change
SE		

SELF-SOUNDS

Previous Definition	Revised Definition	Rationale for Change
Sounds made in conjunction with object movement (sound effects) or made as a vocalized emotional expression. Example: child is playing with train and saying "Choo Choo, Choo Choo."	Same	

Previous Recording Symbol and/or Coding Procedures	Revised Coding Procedure	Rationale for Change
SS	Same	

PHYSIOLOGICAL SELF-SOUNDS

Previous Definition	Revised Definition	Rationale for Change
Sounds resulting from biological processes Examples: sneeze, cough	Category was deleted from the February 1973 Revision of the Nonverbal Action Categories	Actions in this category were rarely encountered during observation

Previous Recording Symbol and/or Coding Procedure	Revised Coding Procedure	Rationale for Change
PSS		

APPENDIX D

WORKING PAPER ON DIMENSION DEFINITIONS, CODING PROCEDURES, AND RELATED QUESTIONS

CENTER FOR YOUNG CHILDREN
UNIVERSITY OF MARYLAND

RESEARCH PROJECT ON INVOLVEMENT

DIMENSION DEFINITIONS, CODING PROCEDURES AND RELATED QUESTIONS

FREQUENCY

Definition

Frequence is an indication of the amount of repetition or the number of times an action occurs. Frequency might be placed on a "two times," "several times," "continuously" scale.

Coding -- Point of Reference

1. Could frequency (repetition) be computed or determined at the completion of observation?

2. If the frequency of individual motions within an activity or task is computed, an initial suggesting a specific motion might accompany the motion tally. For example, M_T/D and M_T/E could represent Motion on-task-drawing board and Motion on-task erasing board. These are parts of the larger activity working at the board. (In this example the frequency or repetition of back and forth motions of erasing is not accounted for.)

Questions

1. What is the relationship of frequency to speed and duration? If there is a relationship, would there be a need to consider speed since there appears to be much judgment involved?

2. Might frequency be labeled repetition? (Parallel consideration--might duration be called time?)

3. If Frequency refers to the repetition of individual motions, what of frequency or repetition of larger units of behaviors which are related to a task or interaction? Frequency of Change has been defined as the number of groups of behaviors within an observation where a group of behaviors is limited by orientation to one task (playing with a truck), orientation to one person or one group of persons (playing with peer or peers), self-orientation (sitting alone, murmuring to self), or a combination of task and person orientation (playing with a friend and a truck.)

DIRECTION

Definition

Original definition-- Direction is the focus of attention or movement in terms of a dichotomy of unidirectional behaviors (jumps up, runs toward piano) and multi-directional behaviors (runs around, jumps up and down)

Revised definition-- During Fall 1972 research activities, actions which were on-task or task-related were coded with a subscript T (M_T). Those not task-related or on-task were coded with a subscript A (M_A). This procedure is appropriate when direction is defined as the focus of attention or movement toward or away from a task or interaction. It does not appear to account for the aspects of unidirectional and multi-directional behavior. It also does not indicate the degree of on-task or off-task behavior.

Coding

Task-related or on-task actions are coded using the subscript T (i.e. V /visual/ $_T$).

Actions not task-related nor on-task are coded using the subscript A (i.e. V /visual/$_A$).

DIRECTIONALITY

A New Dimension?

1. Directionality in terms of uni- and multi-directions might suggest focusing and searching behavior. For example, unidirectional behaviors such as looks at or goes to suggest focusing, whereas multidirectional behaviors such as looks around or walks back and forth or among objects or groups of people suggest searching.

2. Can uni- and multi-directional behaviors as described above be considered a dimension as defined in this project?

3. Can they be applied to the action categories defined?

4. Could the same information be obtained by examining data relative to the other dimensions?

5. How would a dichotomous dimension be coded?

6. Might directionality be used to show degree of on-task rather than simply away or toward task?

7. If dimensions were applied to nonverbal categories other than the action categories delineated in the Involvement Project, should Direction (focus toward or away from) remain a separate dimension?

TENSION

Definition

Tension is an indication of the power, intensity, or physical display of emphasis exerted in producing an action. Tension dimension is placed on a weak, average, or strong scale.

Coding

Two possible ways of identifying overt manifestations of tension might be (1) physiological characteristics such as pursed lips, whitened knuckles, shaking hand when trying to manipulate materials and (2) using multiple materials at one time (holding three brushes in hand) or the production of a broad stroke vs. a narrow one, darker stroke vs. lighter one.

Are items in (2) judgments based on observing physiological manifestations? Items in (2) appear to be results of some degree of tension but can it be said there is a direct relationship between amount or degree of tension and width of a stroke? (Often requires more tension or control to execute narrow stroke than broad one). If direct relationship cannot be made, then is the coding interpretive as opposed to descriptive?

Point of Reference

1. How might points of reference for judging weak, average, strong, tension be established?

2. Can tension be considered in terms of increase or decrease (change)?

3. Is tension related more to the individual than to materials? Therefore, would judgments on the degree of tension be more appropriate when the individual is considered predominant?

4. Do certain classes of evidence of tension appear to be somewhat consistently off-task while others on-task? For example, are evidences of tension in body stance (alert, tight, rigid, relaxed) and visual predominantly off-task and evidences of tension exhibited in manipulating objects on-task?

Questions

1. Might tension be a function of age, of setting?

2. Do different children respond to the same materials with different manifestations of tension?

3. Is tension related to arousal?

DURATION

Definition

Duration is an indication of the length of time an action occurs. Duration may be placed on a short, average, long scale which may be further specified in terms of (1) one or two seconds, several seconds, minutes, or (2) briefly, for a while, for a long time.

Coding

1. When task is clearly defined and an end point visible, duration can be coded by noting the time a task is begun and the time it is completed. In this instance, duration is not compared to durations of other activities. The time unit is the length of time it takes to complete a specific activity. In addition to obvious task completion, time spent at an interaction may be determined by an individual's leaving a task even though a task appears incomplete to the observer.

2. Duration may be coded by using a 10 second (or other unit) beep during an observation. A "1" could indicate a behavior lasting one beep or less, a "2" indicating a behavior lasting between 11 and 20 seconds, and a "3" indicating a behavior lasting 30 seconds or more.

Point of Reference

1. Times spent on different activities or interactions may be compared. For example, amount of time spent in block play may be compared with that spent at the easel.

2. If many observations of individuals engaged in a task (i.e., block play) were made and the total amount of on-task motion obtained, an average duration for each activity could be computed. This would probably be an average for an age range.

3. It might be possible to consider such an average for all activities for a specified age range.

4. In more open-ended tasks, a ratio might be formed comparing the amount of time spent on smaller tasks within the larger to the total time spent on the larger more inclusive task. For example, what percentage of time spent playing store is devoted to bagging groceries, making change, etc.?

5. If observation is timed by noting time intervals of a selected unit, can judgments relative to duration be made upon completion of the observation?

Questions

1. What are the possibilities of judging duration in terms of short, average, and long without specific time intervals? (Judgments checked by inter-coder agreement.)

SPEED

Definition

Speed is an indication of the velocity of an action. It may be placed on a slow, moderate, fast scale.

Coding -- Point of Reference

1. Is speed related more to individual(s) than to material or task? Does the task or materials appear to set limits on speed more than does the individual?

2. What are the possibilities of defining speed in terms of the number of actions (see Action Category System) per time segment? (Frequency/unit time possible except when an action occurs once.)

Questions

1. What is the relationship of speed to frequency and to direction?

2. What is the relationship of speed to space?

RANGE

Definition

Range of movement is the width of a movement. Range can be placed on a narrow, average, broad scale.

Point of Reference

1. Range appears to be relative to the task.

2. Materials and space seem to be predominant in identifying a point of reference for placing range of movement on a scale.

3. If the point of reference is the area or space involved, then the amount of physical space traversed or encompassed in a body movement is considered in establishing a point of reference.

4. If the point of reference is the body, range of movement is compared to individual potential.

APPENDIX E

DATA COLLECTION EXERCISES

CENTER FOR YOUNG CHILDREN
UNIVERSITY OF MARYLAND

DATA COLLECTION EXERCISES

Involvement Project (May 1973)

Exercise 1 Directions Sheet

Follow the procedure below using the tally sheet containing colums 1, 3, 5, 6, 8, 10, 11 for each ten-second observe period followed by a twenty-second record period.

1. Record the number preceding the word "observe" on the tape in Time Start Column (#1)

2. List all arm and hand movements observed in the behaviors column (#3) during the ten-second observe period.

3. Rate each behavior listed on Speed (column #5), Physical Display of Effort (column #6 called Tension), Range (column #8), and Directionality (#10) during the twenty-second record period by making a check mark in the appropriate side of the column.

After an agreed upon number of observe and record periods, summarize the data as follows:

1. Write an A in the listing part of the Agree-Disagree column (#11) for each behavior you listed that everyone else listed.

2. Write a D in the listing part of the Agree-Disagree column (#11) for each behavior you listed that not everyone listed.

3. Write an A in the rating part of the Agree-Disagree column (column #11) for a behavior that you listed that was coded in the same way by everyone who listed it.

4. Write a D in the rating part of the Agree-Disagree (column #11) for a behavior that you listed that was not coded in the same way by everyone who listed it.

(You may want to write four letters for each behavior listed in the rating part of the Agree-Disagree column (#11), one for each of the four dimensions rated.)

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Involvement Project (May, 1973) Exercise 1 Definitions Sheet with Rating Instructions

I. Speed

A. Definition --Speed is an indication of the rapidity of a movement or action.
Speed may be placed on a slow, moderate, fast continuum.

B. Rating Instructions

1. Speed is rated as high (H) when it is fast, i.e.,a single movement or unit (jumps up and down since when one jumps up he must come down) takes less than one second or before you can say "a thousand one."

2. Speed is rated medium (M) when it is moderate, i.e., single movement or unit takes one to two seconds.

3. Speed is rated low (L) whe it is slow, i.e., a single movement or unit takes more than two seconds.

II. Physical Display of Effort (listed as Tension)

A. Definition --Physical Display of Effort is an overt manifestation of force or power exerted. Manifestations of physical force include both muscular contractions of the body or coloration, and observable changes in the shape or size of materials or manipulation of multiple materials or auditory cues. Physical Display of Effort is rated on a slight change, moderate change, or drastic change continuum.

B. Rating Instructions

1. Effort is rated high (H) when there is an unusual or drastic change in the size or shape of materials, when physical limits are approached in the holding or manipulation of materials, or when movement is accompanied by a loud noise.

2. Effort is rated medium (M) when there exists a moderation in the above.

3. Effort is rated low (L) when body manifestations or observable changes are just discernible.

III. Range

A. Definition -- Range is the width of a movement. Range is placed on a narrow, average, broad continuum.

B. Rating Instructions

1. Rating the motion of body parts in contact with the materials or as they move on or over the physical area of the materials, as high (H) when the motion covers the whole area of the materials or as medium when the motion is neither high nor low and (L) when the motion is over a small portion of the materials.

2. Rate locomotion as high (H) when the locomotion path is more than a few steps off the shortest path, as medium (M) when the path is of neither high nor low range, and as low (L) when the locomotion path is the shortest necessary to use the materials.

3. Rate the motion of parts of the body not in contact with materials or in contact with the materials but moving them as a whole as high range (H) when the motion of bodily parts nears the physical limits of extension, as medium (M) when the range is neither high nor low, and low (L) when the motion of bodily parts is just discernible.

IV. Directionality

A. Definition -- Directionality refers to the focus of attention or movement in terms of the singularity or multiplicity of direction.

B. Rating Instructions

1. Rate as unidirectional (Uni) when there is a single movement, focal point or direction such as runs forward.

2. Rate a movement as multidirectional (Multi) when there is more than one focal point such as swings his leg back and forth.

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Exercise #1

1	2	3	4	5	6	7	8	9	10	11	
Time Start	Activity	Behaviors	Freq.	Speed H M L	Tension H M L	Freq. H M L	Range H M L	Direction On Off	Directionality Uni Multi	Agree-Disagree Listing Rating	Comm

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Involvement Project (May 1973)

Exercise 2 - Directions for Coding and Rating Duration and Frequency

I. A. Follow the procedure below using the tally sheet containing columns 1, 2, 3, 4, 7 for each 10 second observe period followed by a 20 second record and rate period.

B. Use the following activity definition: Activity is defined by the direction of a person's vision.

C. Base: Objective referent

D. List: All behaviors of hand and arm (primarily) and feet (secondarily) are listed in column 3.

E. Length of observation period: Do a lengthy observation of at least 10 minutes.

II. When the observation has been completed, go back to the tally sheet and attempt to apply the second definition of activity which includes all of the following:

A. Evidence of interaction between individual and materials or other individual(s).

B. Evidence that subject is giving priority to selected materials or persons within context.

C. Evidence of employment of parts of the body or the senses.

Can you regroup the behaviors, defined by the first definition, into new activities as defined by this second definition? You might want to place brackets around the old behaviors you regroup according to the second definition.

CENTER FOR YOUNG CHILDREN
UNIVERSITY OF MARYLAND

Involvement Project (May 1973)

Exercise 2 - Definitions and Instructions for Rating Duration and Frequency. There are two definitions for Frequency and one definition for Duration.

FREQUENCY

1. Frequency of movement--Frequency is the amount of repetition one can observe in terms of the number of times it occurs. Movement frequency refers to individual motions occurring within the context of a larger activity, i.e., dipping brush, applying strokes to easel during activity of painting.

   Coding and rating--Behaviors are tallied in column four (Frequency) during the observation period. Example:

Behaviors	Freq.
swings arm	III

   Frequency of movement is placed on a scale ranging from no repetition or few to movement occurring several times to movement occurring many times. Movements are rated in column 7 during the 20 second rating period.

2. Frequency of activity--Frequency of activity is the number of times an individual engages in or returns to an activity or interaction such as painting or cooking.

   Coding and rating--List the larger activity in the column 2 (Activity). The observer should note at the end of the observation period the number of times the child returns to the activity being tallied.

DURATION

Duration of an activity is the length of time an individual interacts with particular materials or people.

Coding and rating--Listing the activity for duration (column 2) is the same as listing the activity for frequency. At the beginning of the activity note the time in column 1 (Time start). Each time the activity changes and a new activity begins (when vision changes direction) note the time in the Time Start column. Rating is on a short or long time duration. At the end of the observation period, note the amount of time spent in each activity.

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Exercise #2

1	2	3	4	5	6	7	8	9	10	11	12
Time Start	Activity	Behaviors	Freq.	Speed H M L	Tensions H M L	Freq. H M L	Range H M L	Direction On Off	Directionality Uni Multi	Agree-Disagree Listing Rating	Comment